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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/897,613	07/03/2001	Hidetoshi Honbo	503.34465VV4	1835

20457 7590 03/08/2006

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EXAMINER

MAPLES, JOHN S

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 03/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/897,613

Applicant(s)

HONBO ET AL.

Examiner

John S. Maples

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13,14,20,21,24,32 and 33 ~~is/are~~ are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13,14,20,21,24,32 and 33 ~~is/are~~ are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 13, 14, 20, 21, 24, 32, 33 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the negative electrode being graphite, does not reasonably provide enablement for other materials besides graphite forming the negative electrode. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. (New Rejection)

With the new language in the independent claims, "an active material of said negative electrode is graphite", this allows for other materials to form the electrode besides graphite. Applicant does not provide support in the present specification for other materials but only recites graphite as the negative electrode.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 20, 21, 24 and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. (New Rejection)

In each of line 3 in claims 20 and 24, applicant has not provided antecedent basis for "graphite electrode".

Claims 21 and 33, dependent on claim 20, fall therewith.

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5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 13-14, 20-21, 24 and 32-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Takami et al. (Takami)

Reference is made to column 2, lines 3-28 of Takami along with column 5, lines 50-64; column 12, lines 10-31; column 13, lines 59-column 14, line 43; column 16, lines 17-64 and Example 27. In these portions, and especially in columns 13 and 14, Takami discloses the hexagonal crystal structure of the graphite negative electrode and for the particle size thereof being in a range of less than 100 microns. As is well known in the art, there is at least a 3% amount of rhombohedral crystal structure present in the hexagonal graphite crystal negative electrode, which amount meets the claimed amount. In any event, applicant has used a lower range of 0% for the amount of rhombohedral crystal structure present in the anode graphite material in most of the claims and thus a teaching of crystal graphite anode material absent rhombohedral type structure would meet the claimed subject matter. In addition, it is inherent in the teachings of Takami that the capacity for the graphite crystal powder would be at least 320 mAh/g because this reference teaches the same material so that its capacity would be the same as set forth in the present application.

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Applicant's arguments have all been considered but are not deemed persuasive. Applicant argues that the graphite in Takami is not of an orderly and regular hexagonal crystal structure. The examiner respectfully disagrees. More specifically, applicant argues that Takami teaches a structure having crystallites and not crystals of the carbon material. Applicant further defines a difference between crystallites and a crystal according to Hawley's chemical dictionary. The applicant further states that Takami does not teach graphite powder having a crystal structure. The examiner respectfully disagrees.

It is noted that Takami sets forth in multiple places in the document, a carbonaceous material for the anode in a lithium secondary battery having an exothermic peak and an intensity ratio of two different diffraction peaks obtained by X-ray diffraction analysis. See specifically, the abstract in Takami, column 3, lines 1-8, column 3, lines 56-60, column 6, lines 29-59, column 9, lines 14-28, column 10, lines 51-58, among many other portions in the patent. These values indicate a crystal structure for the entire anode material. A material would necessarily have to comprise an entire crystal structure to exhibit such analysis when undergoing X-ray diffraction procedures. It is noted that applicant acknowledges that such spectra exists for the carbon anode material in Takami as set forth on pages 13 and 14 of applicant's recent filing.

Applicant argues that with the amended terminology "substantially completely" a crystal structure, the claims now define over the Takami reference. This argument is not convincing. As stated in the previous paragraph, because the Takami patent

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repeatedly recites X-ray diffraction data, the structure of the graphite powder in Takami is necessarily completely crystal.

Applicant further mentions that Takami recites the carbon material having displacements, twists and angles of the hexagonal-net-plane layers, giving the size of the graphite structure and because of this disclosure, cannot be a completely crystal structure. This argument is deemed traversed by the previous paragraph.

In addition, as set forth in Takami and outlined in applicants' response, the carbon material in Takami does include crystallites, however, in view of the many portions in Takami where the above X-ray diffraction peaks are delineated, Takami sets forth an entire crystal structure for the carbon anode material. Thus Takami indeed discloses crystal structure that includes orderliness and regularity of the layers.

A further argument by applicant is that Takami does not teach an entire crystal structure while the examiner contends that Takami does by virtue of the X-ray diffraction data cited in the patent. It is noted that the claimed subject matter does not include this terminology. Applicant has not claimed the crystal structure as being "entire" as applicant has argued.

Applicant further argues that Takami does not have high crystallinity and has displacements, twists and angles unlike applicant's structure. This may be true, to some degree, however, applicant has not included claim language that covers these further limitations and thus applicant's arguments relating to these points are deemed moot.

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It is noted that applicant has not argued either the assertion that all carbon crystal material includes at least 3% rhombohedral crystal structure and that because Takami sets forth the same carbon crystal material as applicant that it is inherent that the same would have the same capacity as applicant has claimed.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 13-15, 17-21, 24 and 32-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flandrois et al.-US 5,554,462 (Flandrois).

Reference is made to the Abstract in Flandrois along with column 1, lines 26-40; column 5, lines 6-13, Example 1 and Example 3. Flandrois sets forth a graphite anode material that includes both rhombohedral and hexagonal crystal structure in the claimed amounts. Flandrois sets forth in Example 3 a carbon containing material having less

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than 5% of rhombohedral phase. This is consistent with applicant's amount-see Table 1 in applicant's specification and the last entry therein. Because Flandrois teaches the same material as applicant's, it is inherent that the graphite powder in Flandrois would have a deintercalating capacity for lithium of at least 329 mAh/g.

The only claimed feature not shown or taught in Flandrois is the particle size of the graphite anode material being equal to or smaller than 100 microns. Example 3 of Flandrois sets forth graphite being ground in an impeller beaker for a minimum period of 15 minutes. It would have been obvious to one of ordinary skill in this art at the time the invention was made to have ground the graphite in Flandrois so that the size thereof would have been 100 microns or less because such size would allow the anode material to compact to a greater extent in the battery cell and produce the maximum amount of electrical output. It is also notoriously well known in the battery art to have the electrode powder be of this particle size.

Again, applicant's arguments have been considered but are not deemed persuasive. Applicant argues that Flandrois is directed to a different purpose than that of applicant. This may be true, however, for the reasons above, the claimed subject matter is met by the patent to Flandrois.

Applicant's arguments relating to the passivation capacity in the Tables in Flandrois are deemed moot in view of the above discussion of Flandrois and the fact that this patent teaches the claimed graphite powder.

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Applicant has attacked the application of Flandrois in and of itself. The examiner has applied Flandrois in combination with Takami and so the arguments directed solely to Flandrois are deemed moot.

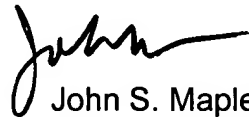
It is noted that applicant did not argue the particle size argument made by the examiner in the last office action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John S. Maples whose telephone number is 571-272-1287. The examiner can normally be reached on Monday-Thursday from 6:15-3:45, and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



John S. Maples
Primary Examiner
Art Unit 1745

JSM/3-06-2006